

BEST PRACTICE PROGRAMME

Energy Consumption Guide

15

This Guide, drawn up in collaboration with the Department of Education and Science (DES) helps you compare your school's expenditure on energy with that of other schools. It also outlines how to set about reducing energy costs.

Under Local Management of Schools (LMS) the school's energy cost is one of the responsibilities that the Local Education Authority has transferred to the school's governing body.

In the past it is likely that most schools have given little attention to controlling energy costs. Now with LMS there is a real incentive to give it a higher priority. Energy is one area where costs can be reduced, whilst maintaining or even improving, the school environment. If energy costs are not kept under control, overspending can force economies elsewhere.

Good Housekeeping

The way in which staff and pupils use a school can have a significant effect on its energy bill. By adopting good housekeeping habits, such as switching off lights, energy costs can be cut by about 10%. Potential savings range from a few hundred pounds a year in a small primary school to several thousand pounds in a large comprehensive.

Savings from good housekeeping should be your first aim. A separate Best Practice leaflet is available

from BRECSU giving detailed advice (Good Practice Guide 29).

Further Benefits of Energy Efficiency

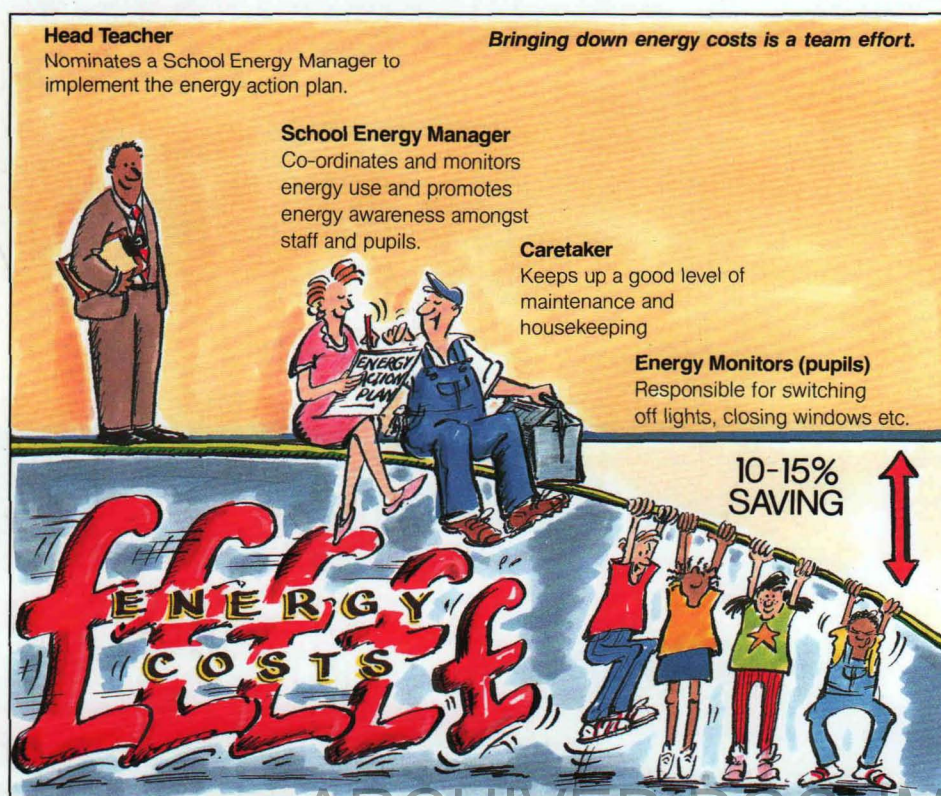
As well as lowering energy costs and releasing money for direct educational use, energy efficiency provides other benefits within the school and in a wider context. These include:

- **Improved comfort.** Better control of energy use usually results in improved working conditions for teachers and pupils alike.
- **Increased pupil awareness of energy issues.** Energy issues can be integrated into the curriculum and project work. Pupils can use their own school building as a real life experiment by monitoring its energy consumption and assessing the impact of energy efficiency measures.
- **Preservation of natural resources.** Energy efficiency helps to preserve finite energy resources for the future.
- **Less environmental pollution.** Energy efficiency contributes to a cleaner and more healthier environment by reducing emissions of carbon dioxide (a major contributor to global warming) and sulphur dioxide (a major cause of acid rain).

SAVING ENERGY

IN SCHOOLS

THE HEADTEACHER'S AND GOVERNOR'S GUIDE TO ENERGY EFFICIENCY



Energy Efficiency Office
DEPARTMENT OF ENERGY

ARCHIVED DOCUMENT

How Does Your School Compare?

The charts on the right are intended to enable you to make a quick first assessment of how your school's energy costs compare with those for other schools on a £/pupil basis. The charts are based on the energy records of 3,000 schools.

The £/pupil basis was chosen partly because of its simplicity and partly because much school funding is allocated in £/pupil.

The notes above the charts explain how to use them. 80% of the schools in the survey fall into the range covered by the coloured bands. If your school falls to the left (or to the right) of the bands, its energy performance compares with the best (or worst) 10% of the schools surveyed (respectively).

Wherever you are on the charts, there is room to improve. Schools with a poor energy record have the greatest potential for making savings. Schools with low energy costs should not become complacent; further improvements are usually possible.

There is a wide variation in energy costs (see chart). Some of this variation is due to factors that are not a direct reflection of the energy efficiency of the school; out-of-hours use and falling rolls for example. So before you become too alarmed, consider the reasons for your school's position on the charts. Three factors were shown to influence energy consumption significantly:

- Occupancy levels.** In general, the more efficiently a school utilises its space, the lower its energy costs per pupil. In areas of the U.K. where school rolls are falling, and as a consequence heated areas are under utilised, energy costs per pupil will inevitably rise. It will not always be possible to close off classrooms or buildings, but where it is, such actions can lead to valuable energy savings. For each type of school, the average area per pupil identified in the survey is given in the charts. These provide clues to space utilization in your school.
- Age of school.** The influence of this is less pronounced. Whatever the date your school was built, there are schools of a similar age that come in the top 10% of energy performers and others that come in the bottom 10%. However, a higher than average proportion of the better energy performers are post 1980 schools.
- Hours of use.** Extending the hours of use by two hours a day is likely to increase energy costs by about 10%. Schools with boarders would expect to have higher costs per pupil, perhaps up to 50% higher than day schools.

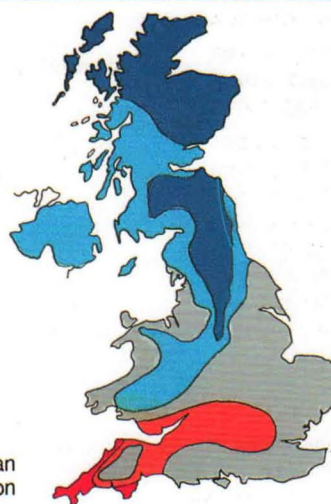
So if you have a small, old school with high levels of extra curricular use, the charts are likely to show that you have higher than average energy costs. Conversely, if your school is large and modern you should expect to have lower than average energy costs. To give you a clearer idea of where savings may be made Energy Consumption Guide 16, for "School Energy Managers", explains how to go about analysing your energy costs.

A more sophisticated method (the Normalised Performance Indicator (NPI) method) for assessing the energy efficiency of your school is explained in the EEO yellow book 'How to bring down energy costs in SCHOOLS'. This has been distributed to all schools. It will give a more accurate rating of energy efficiency. It is the method commonly used by Local Authorities that have Energy Management Units.

To use the charts:

1. Find the total cost of all fuels (electricity, gas, coal, oil etc) supplied to the school in the 1989/90 school year.
2. Divide the total fuel cost by the number of pupils in the school to arrive at a cost in £/pupil.
3. Select the correct chart for your type of school. Locate your cost in £/pupil on the horizontal scale and move up the chart until you come to the coloured band that represents your climatic region.

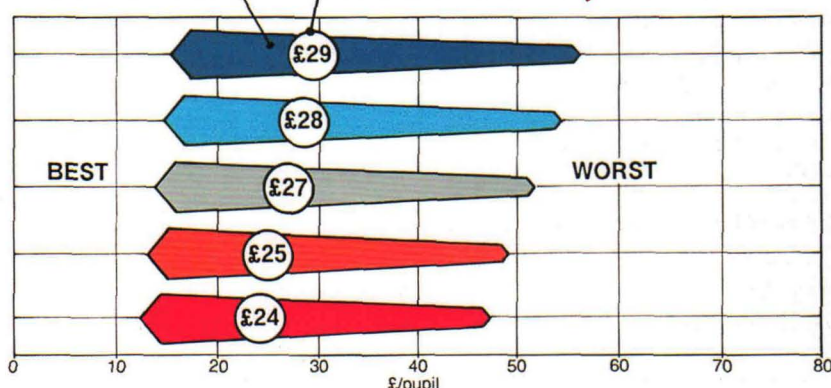
The charts have been compiled from data collected for the 1989/90 school year. The charts should only be used for other years if adjustments are made for changes in fuel prices and differences in winter temperatures. Energy Consumption Guide 16, for School Energy Managers, shows how to take these variables into account.



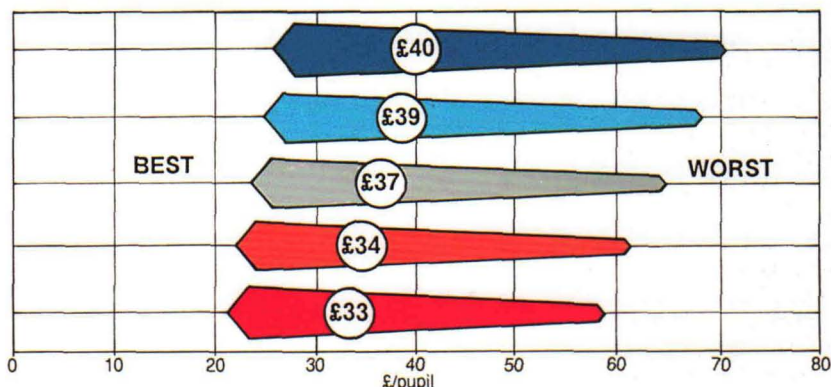
Key:

80% of schools from the survey fall within the coloured bands

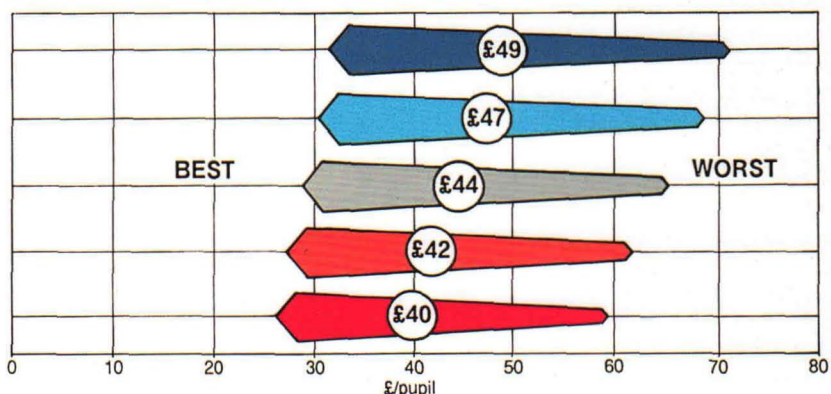
Energy cost for median school in each region



PRIMARY AND MIDDLE SCHOOLS (average pupil density 7m²/pupil)



SECONDARY SCHOOLS (average pupil density 10.3m²/pupil)



SECONDARY SCHOOL WITH ADDITIONAL FACILITIES (eg INDOOR POOL OR SPORTS CENTRE) (average pupil density 10.8m²/pupil)

Survey of energy costs for the 1989/90 school year

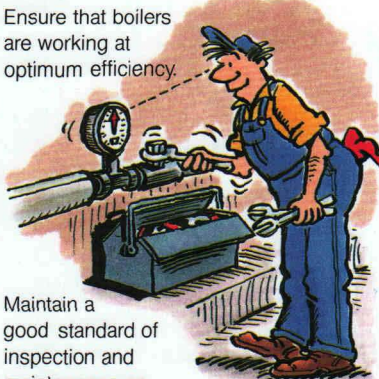
School Energy Manager

- Monitor energy and water consumption and check fuel bills.
- In conjunction with the Caretaking staff, look for obvious areas of waste and prepare a list of items needing servicing, repair or replacement.
- Maintain contact with the Local Authority, the technical staff for energy advice, and the Maintenance Department, for prompt repairs and maintenance.
- Produce material to promote energy awareness amongst staff and pupils.
- Report back on progress, and publicise how the savings are benefitting the school.



Caretaking staff

- Ensure that boilers are working at optimum efficiency.
- Maintain a good standard of inspection and maintenance on items that affect energy use, eg heating equipment, draughtstripping, pipe insulation, leaking taps etc.
- Regularly check the operation of timeclocks, thermostats and control valves.
- Minimise the number of lights left on when the school is being cleaned.



Energy Monitors (pupils)

- Turn off lights,
 - Close windows,
 - Report dripping taps,
 - Record temperatures, etc.
- Pupils in each class to take it in turns to be monitor.



The activities of key members of the Energy Team.

An Energy Action Plan

How should you go about reducing the energy costs of your school? The first step is for the Headteacher and Governors to agree an Energy Action Plan and then nominate a School Energy Team as outlined in the box above.

Schools with a successful record of energy management usually have the following features in common:

- The support of the headteacher and governors. This is essential if the full potential for savings is to be realised in practice.
- A 'School Energy Manager'. The best person to be a School Energy Manager will vary from school to school. It could be a teacher, caretaker, governor or interested parent, but enthusiasm for energy issues is an important qualification. He or she should agree with the headteacher the duties and authority of the Energy Saving Team necessary to implement the Action Plan.
- The cooperation of the caretaking staff. Their goodwill, support and experience is crucial if others are to play their part effectively.
- Pupils acting as energy monitors in each class.
- The involvement of the whole school. This can take the form of project work, theatre groups, poster competitions etc. — all help to increase energy awareness among pupils and staff.

If the school has not already had an 'energy survey' conducted this should be considered for inclusion in the Action Plan.

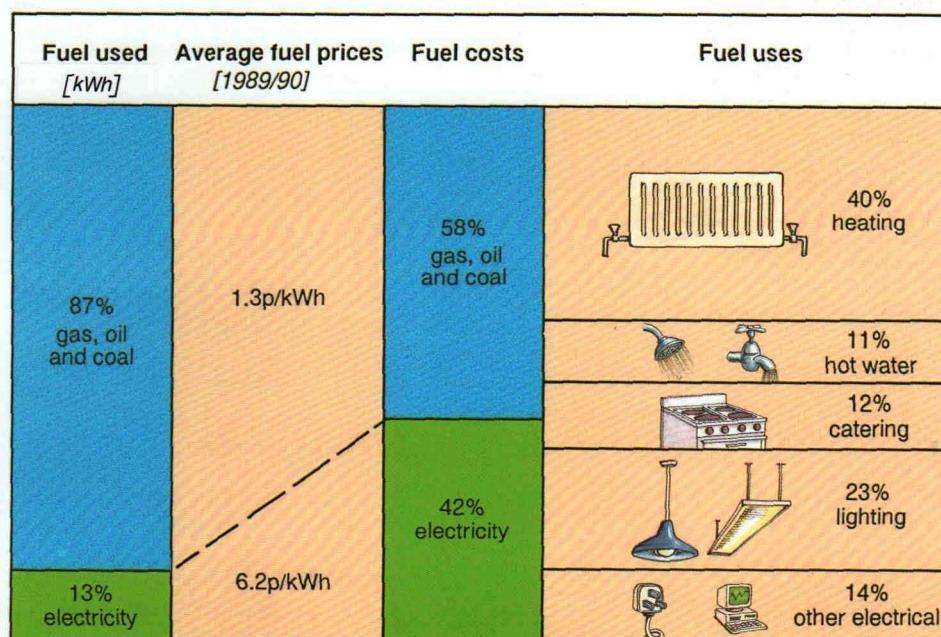
Where Energy is Used

Few schools are able to determine exactly how energy is used. The split between heating, hot water etc. will vary markedly from one school to another and will depend on many factors. Of key importance:

- the efficiency of the heating plant, lighting system, etc.
- how well the school is insulated
- how diligent the staff and pupils are at good housekeeping.

The diagram below shows average figures based on schools that have been monitored in detail. It highlights the importance of heating and lighting in the overall energy bill.

The cost of electricity is almost five times that of gas, oil or coal. So although electricity accounts for around 15% of energy consumption, it is responsible for over 40% of total energy costs.



How fuel is used in a typical school

HEADTEACHERS AND GOVERNORS

Where Energy is Wasted

It is very worthwhile to undertake a regular "Energy walk round", spotting any maintenance problems, unnecessary waste and future investment opportunities. For this, it is best to ask the Head (or Deputy), the School Energy Manager (if different), the Caretaker and perhaps an energy specialist from the Local Authority to discuss plans.

Using Local Authority Resources

Unless your school has opted out of Local Authority control and become a Grant Maintained School, you will be dependent on the Education Authority for major maintenance and investment. Some Education Authorities take a positive view and offer a 'shared savings scheme' based on loans or shared investment in physical improvements requested by schools. Good records and an understanding of how your school uses energy will help when you discuss your ideas with the Local Authority.

If the Education Authority announces plans for major repairs or refurbishment of your school, it is in your interest to ensure that they take the opportunity to incorporate extra insulation, or specify energy efficient equipment as part of the work.

The necessity for repair and replacement work represents an ideal and often unrepeatable opportunity to upgrade the energy performance of a school in a very cost-effective way. If the opportunities are missed it could be a long wait before they arise again.

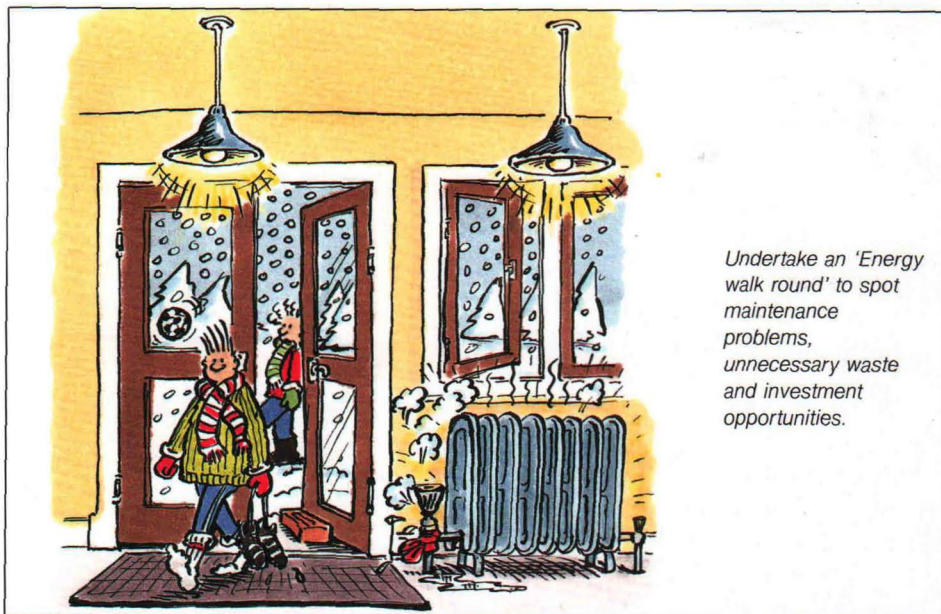
Ask your Local Authority if they have negotiated any "bulk purchase" fuel arrangement. These can be highly beneficial to schools. Try to ensure that you can still take advantage of such arrangements following LMS.

Many Local Authorities have an Energy Management Unit (EMU) to advise them on the efficient use of energy in Local Authority buildings, including schools. The precise role of EMUs differ from authority to authority. Many are adapting to meet new needs arising out of LMS. Invite yours to come and talk about what you want to do. You have nothing to lose by seeking their professional advice. Many have built up a well earned reputation for offering sound, practical advice.

You can also seek advice from independent energy consultants and fuel utilities, but the range of services on offer and their knowledge of schools is normally more limited than a well established EMU.

Useful Organisations and Publications

The Energy Efficiency Office of the Department of Energy has a range of free publications aimed at supporting both energy education and energy management in schools. The EEO published the booklet 'How to bring down energy costs in SCHOOLS' which was issued to schools in November 1990. The booklet includes a list of the EEO regional offices where information on all aspects of energy efficiency can be obtained. For



Undertake an 'Energy walk round' to spot maintenance problems, unnecessary waste and investment opportunities.

further information contact: Department of Energy, Energy Efficiency Office, Publications, Blackhorse Road, SE99 6TT.

The Centre for Research, Education and Training in Energy (CREATE) exists to promote the development of energy education and training. Contact 0492 534896 for further details.

The National Education Resource and Information Service (NERIS), a computerised system for storing and disseminating information about learning resources. Contact 0525 290364.

The Building Research Energy Conservation Support Unit (BRECSU), at the Building Research Establishment, manages the EEO Best Practice programme for improving energy efficiency in buildings. BRECSU is currently collaborating with the DES to prepare guidance material on energy efficiency in schools, such as this Guide. Others in the series include Information Leaflet 23, 'Energy Efficiency in Schools' which you should already have received.

Energy Consumption Guides:

Saving Energy in Schools — The "School Energy Managers" Guide to energy efficiency. ECON 16

Saving Energy in Schools — The Local Authority Chief Officer's Guide to energy efficiency. ECON 17

Good Practice Guides:

Good Housekeeping in Schools — A Guide for School Staff, Governors and Pupils. GPG29

Managing Energy in Schools — A Guide for Headteachers and Governors. GPG39

If you would like a current list of BRECSU's EEO Best Practice publications, please contact: Enquiries Bureau, Building Research Energy Conservation Support Unit (BRECSU), Garston, Watford, WD2 7JR. Tel 0923 664258 or Fax 0923 664097.

The Department of Education and Science (DES) also produce a useful range of free publications. The following have particular relevance to energy efficiency:

Design Note 17 — Guidelines for environmental design and fuel conservation in educational buildings.

Broadsheet 25 Energy consumption in educational buildings.

Broadsheet 27 Energy efficient school refurbishment.

Building Bulletin 73 — A Guide to Energy Efficient Refurbishment.

Contact the Publications Despatch Centre on 081 952 2366.

Further copies of this leaflet can be obtained from:

For further information on this or other buildings-related projects, please contact: Enquiries Bureau, Building Research Energy Conservation Support Unit (BRECSU), Building Research Establishment, Garston, Watford, WD2 7JR. Tel No. 0923 664258. Fax No. 0923 664097.

For further information on industrial projects, please contact the Energy Efficiency Enquiries Bureau, Energy Technology Support Unit (ETSU), Building 156, Harwell Laboratory, Oxon OX11 0RA. Tel No: 0235 436747. Telex No: 83135. Fax No: 0235 432923.